



A Brief Review on Herbal Antifungal Soap

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ABSTRACT

In this review we studied about different herbal plants which are used for the preparation of Herbal Anti fungal soap. There are several herbal plants that grow naturally and have a variety of chemical components utilized in cosmetic preparations. Herbal cosmetics are particularly important due to their high activity and lack of adverse effects. The most prevalent type of skin infection in humans is a fungus, which necessitates intensive care both for healing and for maintaining excellent skin. Anti fungal soap is a particular kind of soap that is used to treat various fungal infections. These infections may be treated with allopathic medications or with conventional herbal remedies like plant extracts or herbal oils. In this review we studied about the different herbal plants which shows an Anti fungal activity such as Neem, Aloe Vera, Tulsi and Turmeric. All this herbal medicines are well known and reputed in Ayurveda due to their Anti fungal activity. Fungal skin infections are most common amongst people, requiring significant attention for treatment and also to maintain good and healthy skin. Azadiracta indica, Aloe berbadensis, Curcuma longa and Ocimum sanctum shows effect on the Candida albicans. Herbal soap helps to rectify the problems of fungal skin infections. Most of the commercial soaps contain chemicals that can be harmful to the skin.

Keywords: Antifungal, Herbal soap, Neem, Aloevera, Tulsi, Turmeric.

1. Introduction:

Herbal cosmetics are created by combining one or more herbal substances with other cosmetic ingredients to create a basis that can be used to treat a variety of skin conditions. New medication products for cosmeceutical and medicinal uses frequently use plants as their primary source of ingredients. Cosmetics are a substance which used to apply on the human body parts like face, hands to soothing the skin, promoting beauty, enhancing the without any changes in the body functions and body structures. Nowadays use of herbal cosmetics by the people increasing day by day and great need of herbal cosmetics skin care products day to day life. In addition to dosage form, such as cream, powder, soaps, or solutions, herbal cosmetics are also categorized by the part of the body they are intended to be administered to, such as cosmetics for the skin, hair, nails, teeth, and mouth. The fundamental concept of aesthetic skin care is ingrained in the medical systems of the Rigveda, Yajurveda, Ayurveda, Unani, and homeopathy. This is the goods that use plants in extract or crude form. Herbs are important for disease prevention and health promotion. The following are the advantages of herbal cosmetics. Types of skin cosmetics are available in markets such as sunscreen, anti-wrinkle, anti-aging, anti-acne etc [1,2,3]. Topical antifungal soaps are used as a supportive treatment for a variety of fungal illnesses, including eczema, psoriasis, athlete's foot, and many more. Due to their all-natural constituents, broad spectrum of effectiveness, and few side effects, herbal soap compositions are quite popular in the treatment of fungus infections [4].

1.1 Skin:

The exterior surface of the body is covered by the skin or cutaneous membrane. In terms of weight and surface area, it is the largest organ in the body. The purpose of the skin is to regulate body temperature, serve as a blood reservoir, provide protection from the environment, and provide cutaneous feelings, excretion and absorption, and the production of vitamin D. The system of external protection stops germs from entering the body. The largest exterior defensive system is the skin. Although it protects the outside of the body, skin has additional purposes in addition to acting as a protection. It acts as a mechanical shield between the body's interior and the outside world. Skin temperature varies between 30 and 40 degrees Celsius depending on the environmental conditions [5]. Skin infections are a serious public health issue. The usage of chemical cosmetics items increases the risk of skin illness. The only other option for this use of herbal products in our daily lives is a problem. Herbal compared to other products, those have a relatively low amount of negative effects items made of chemicals. The most common type of fungal skin infection is widespread in society and requires appropriate attention for treatment, as well as help keep your skin smooth and healthy following treatment. Fungi, in general, lie in the skin's uppermost, dead layer and irritate. Skin is most accessible organ in human body for topical administration and it is main route of topical drug delivery system [6,7].

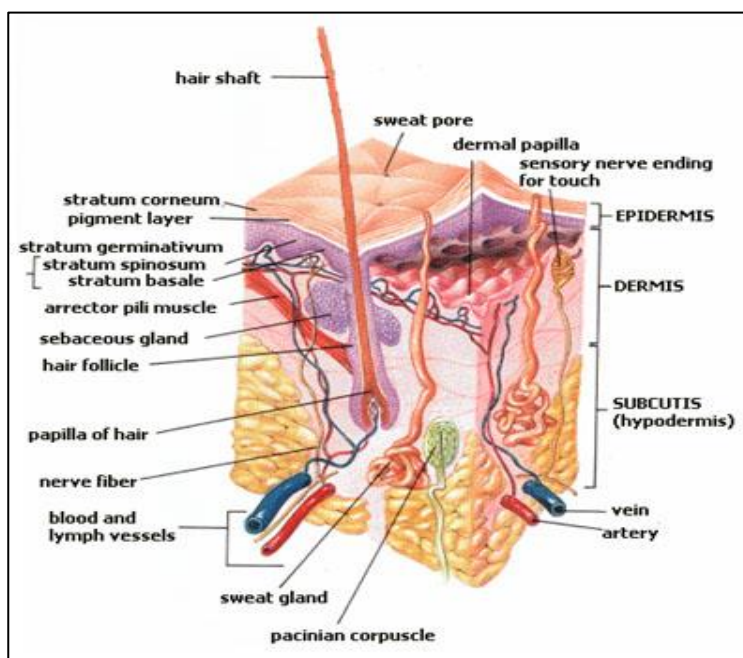


Fig.1 Components of skin

1.2 Fungal infection:

Fungal infections, commonly referred to as mycosis, are skin conditions that are brought on by fungi. Fungi come in a million different species. They exist in the soil, on plants, household items, and even on your skin. They can occasionally cause skin conditions like rashes or pimples. Numerous fungus species can fungus infections to occur. On sometimes, fungi that are unusual for being on or inside of your uncontrolled cell growth can result in infection. Yeast infections can contagious. They may pass from one individual to the next. Fungal skin infections are currently one of the world's most pressing dermatological issues. According to research, developing About 40 million people in industrialized and developing nations have fungus infection [9,10].



Fig.2 Fungal Infection

1.3 Antifungal:

Antifungal agents are known as anti-mycotic drug, fungistatic is used to prevent and treat mycosis, such as athlete's foot, ring worm, candidiasis serious systemic infection such as cryptococcal meningitis and other [11]. Topical antifungal soaps are used as a supportive treatment for a variety of fungal illnesses, including eczema, psoriasis, athlete's foot, and many more. Due to their all-natural constituents, broad spectrum of effectiveness, and few side effects, herbal soap compositions are quite popular in the treatment of fungus infections. These Preparations are growing in popularity today. Currently, people are more likely to get a fungal infection thanks to. With the aid of the suggested remedy, people can eliminate fungal infections and the discomfort they bring. The advantage of antifungal soap is to treat the infection with minimal side effects and also with cost effective way[12].

1.4 Herbal soap:

Everyone is familiar with the basic cleaning product known as soap. Soap has been characterized in a variety of ways. It can be any cleaning agent that is produced in the form of bars, flakes, or liquid and is made by reacting salts of sodium or potassium with different fatty acids that are derived from natural sources (salt of non-volatile fatty acids). Any water-soluble salt of fatty acids with eight or more carbon atoms is referred to as soap. Soaps are made for many different purposes, such as cleansing, bathing, and administering medication. The negative ions on the hydrocarbon chain connected to the carboxylic group of the fatty acid provide the soap its cleaning properties [13]. Herbal soap preparations are medicines because they have antibacterial, anti-aging, anti-oxidant, and antiseptic characteristics. They often use plant parts including seeds, rhizomes, nuts, and pulps to treat wounds, treat illnesses, and promote health. When compared to the ingredients of commercial soap, herbal soap does not contain artificial colors, flavors, fluorides, or other additives. Due to their high medical value, cost effectiveness, availability, and compatibility, herbs are the natural items most commonly used in the treatment of practically all diseases and skin disorders. Herbal soap preparations are medicines or pharmaceuticals that primarily use parts of plants, such as leaves, stems, roots, and fruits, to treat wounds, treat illnesses, and promote health. Neem, tulsi and reetha are all natural plant ingredients in herbal soap, and this combination has antibacterial, antifungal, and anti-inflammatory properties. Neem the primary ingredient in this soap, exhibits therapeutic benefits. Neem leaf and its extract have anti-inflammatory, anti-ulcer, anti-malarial, anti-fungal, antibacterial, antioxidant, and anticarcinogenic properties that can modulate the immune system. The highest therapeutic value is found in tulsi. Tulsi lowers blood glucose levels, making it a useful treatment for diabetics. Its leaf juice provides relief from cough, fever, and bronchitis. The key ingredient in this herbal soap is tulsi, which has antifungal, anti-inflammatory, and stress-relieving properties. Tulsi is primary antifungal property helps make soap granules formulation [14,15].

1.5 Ideal Characteristics Of Herbal Soap:

Crafted with natural ingredients and plant extracts, herbal soaps provide a diverse array of advantages for both skin health and overall well-being.

Gentle and mild: herbal soaps are mild and soft on the skin, making them suited for people with sensitive skin. Herbal soaps offer a healthier alternative to traditional soaps because they are free of harsh chemicals, synthetic additives, and artificial perfumes that could irritate the skin.

Moisturizing: Many herbal soaps contain natural oils, which help hydrate and moisturize the skin, such olive oil, coconut oil, shea butter, or cocoa butter. These oils aid in creating a barrier of defense that keeps skin from drying out. It smoothes, supplises, and softens the skin.

Soothing and calming: Herbs and botanical extracts known for their sedative and relaxing properties are regularly included in herbal soaps. Calendula, calendula, chamomile, and aloe vera are among ingredients that can provide treatment for eczema, psoriasis, and sunburn by reducing skin inflammation, redness, and irritation.

Cleansing and Detoxifying: Herbal soaps effectively wash the skin by removing dirt, extra oil, and pollutants while retaining its natural oils. Some plants, like tea tree and neem, have antibacterial and antifungal qualities that can help clear the skin [16,17].

2. Materials for Herbal Antifungal Soap

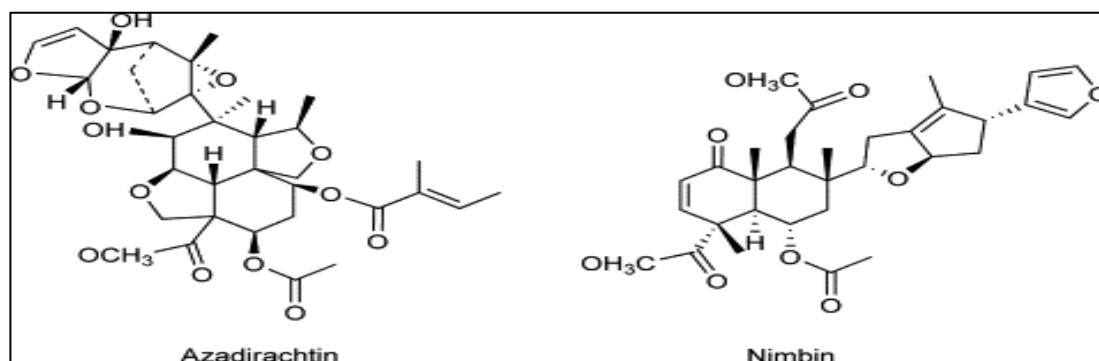
A] Neem:



Fig.3 Neem

- **Synonym :** Neem, Margose, Nimtree
- **Biological Source:** It consists of the fresh or dried leaves and seed oil of *Azadirachta indica J.*
- **Family:** Meliaceae.
- **Chemical constituents:**

The most important active ingredient is azadirachtin, which is followed by quercetin, salannin, sodium nimbinate, nimbolinin, nimbin, nimbidin, and nimbidol. In addition to ascorbic acid, n-hexacosanol, 6-desacetyl-7-benzoylazadiradione, 17-hydroxyazadiradione, and nimbiol, leaves also contain the following substances: nimbin, nimbanene, 6-desacetylnimbinene, nimbandiol, nimbolide, and nimbandiol. The polyphenolic flavonoids quercetin and β -sitosterol, which are known to have antibacterial and antifungal properties, were extracted from fresh neem leave[18,19].



Medicinal uses:

Antifungal activity: a fungus-related condition people have believed that Neem is useful against specific fungi that infect humans since the dawn of time. Several important fungi have been found to be resistant to neem treatments, including ringworm, which assaults the skin and nails, athlete's foot fungus, which impacts the skin, nails, feet, fungi that develop in the bronchi, lungs, and mucous membranes. Neem leaf and oil seed extracts are effective against a variety of fungi, including *Candida*, *Epidermophyton*, *Microspor*, *Trichosporon*, and others.

Anti oxidant, Antiviral activity, Antibacterial activity [20,21,22].

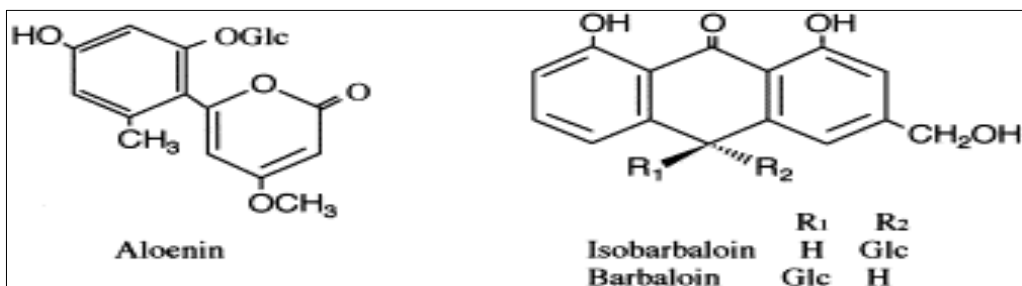
B] Aloe Vera :



Fig.4 Aloe Vera

- **Synonym:** Chinese Aloe, Cape Aloe
- **Biological Source:** It obtained from the dried juice of the leavers of *Aloe barbadensis miller*.
- **Family:** Liliaceae
- **Chemical constituents:**

Aloe Vera contains over 75 potentially active substances, such as vitamins, enzymes, minerals, carbohydrates, lignin, saponins, salicylic acids, and amino acids. The most important constituent of Aloes are three isomers of Aloins, Barbaloin, , which constituent the so - called 'crystalline' [23,24].



➤ **Medicinal Uses:**

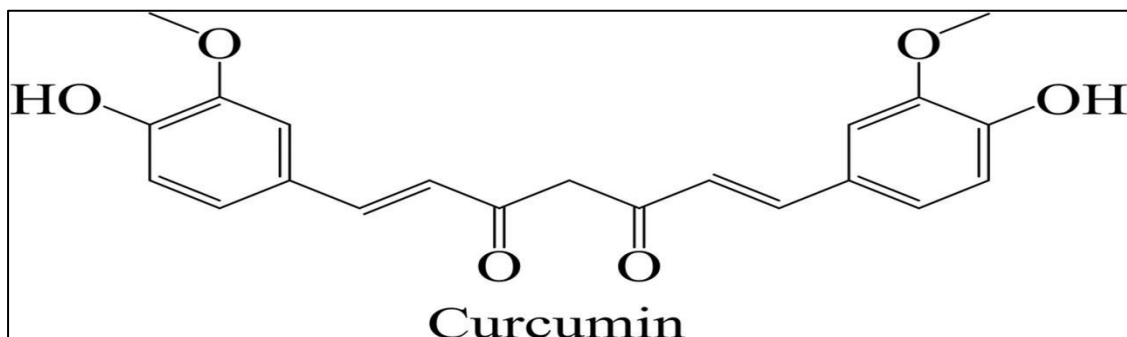
Antifungal activity: *Aloe barbadensis miller*, also known as aloe vera, has been utilized for therapeutic purposes since ancient times, and it is known that one of its medical features is antifungal activity. Aloe Vera exhibits powerful antifungal action against certain pathogenic fungi. In comparison to other extracts, the alcohol-based aloe vera extract can produce greater outcomes. Impacts of gamma and UV radiation on skin exposure, Immunity-related effects, Reduction of inflammation Effects of laxatives, Antiseptic effect, Antitumor activity.[24,25,26]

C] **Turmeric:**



Fig.5 Turmeric

- **Synonyms:** Haldi, Curcuma
- **Biological source:** It consist of dried, as well as fresh rhizomes of plant *Curcuma longa linn.*
- **Family:** Zinziberaceae.
- **Chemical constituents:** The main polyphenolic components in turmeric rhizomes are curcumin, demethoxycurcumin, and bisdemethoxycurcumin, collectively known as curcuminoids (3-6%). In the 19th century, the turmeric rhizome's primary coloring agent was identified and given the name "Curcumin." 1-hydroxy-1, 7-bis (4-hydroxy-3- methoxyphenyl)-(6E)-6-heptene-3,5-dione is another phenolic molecule found in turmeric rhizome. The pale yellow to orange_yellow volatile oil (4-6%) obtained from turmeric consist of a number of mono and sesquiterpenes.[27,28,29]



➤ **Medicinal Uses:**

Antifungal activity: *Curcuma longa* is used as specific fungi infection. It externally used to wounds caused by ringworm, athletes' foot, minor skin injuries, and other diseases[30].The spice turmeric has strong antibacterial and anti-inflammatory properties. Apply the mixture to the diseased region after mixing with a little water. Mix with warm water or consume turmeric tea to gain benefits for the inside body environment. This is among the simplest natural treatments for a fungal infection [31].

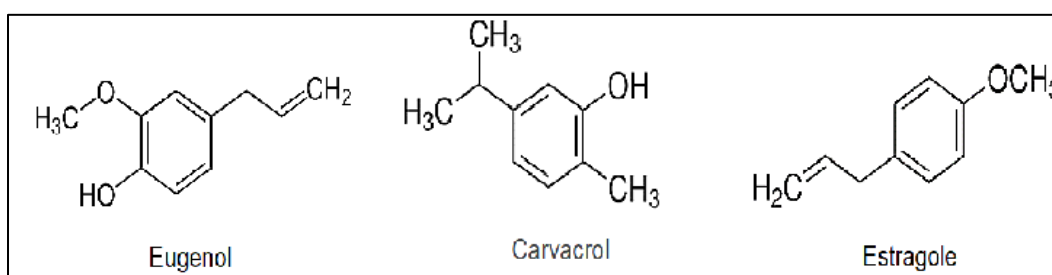
Improve digestion Antioxidant capability Anticancer effect Hyperlipidemia

D] Tulsi:



Fig.6 Tulsi

- **Synonyms:** Holy basil, Gauri
- **Biological source:**It is consist of the fresh and dried leaves of *Ocimum sanctum L.*
- **Family:** Labiatae
- **Chemical constituents:** The primary chemical components of tulsi are oleanolic acid, ursolic acid, rosmarinic acid, eugenol, carvacrol, estragole, linalol, and caryophyllene. These compounds have been used for many years in food goods, cosmetics, dental treatments, and other products for the mouth and teeth. which is made up of roughly 71% eugenol and 20% methyl eugenol. *Ocimum sanctum* fresh leaves and stem extract produced significant amounts of the phenolic compounds (antioxidants) cirsilineol, circimaritin, Leaves of *Ocimum sanctum* contain 0.7% volatile oil. isothymusin, and rosameric acid from Eugene[33,34]



➤ **Medicinal Uses:**

Antifungal activity: *Ocimum sanctum* contains antifungal properties, and the extracts from the leaves may be helpful for treating dermatophytic infections. Tulsi exhibit antifungal action against the certain pathogenic fungus. The ancient medical practices of Ayurveda, Greek, Roman, Siddha, and Unani all make extensive use of tulsi leaves. The herb tulsi has also been used to treat respiratory conditions. Tulsi leaves are frequently used to make Ayurvedic medicine, which is used to treat a variety of illnesses and ailments.It is quite helpful for chronic fever [35,36].The whole plant used has; Hypotension, Antiperiodic activity, Antibacterial properties, Expectorant properties [37].

Sr.no	Ingredients	Role
1	Neem	Antifungal Agent
2	Aloe vera	Antifungal Agent
3	Turmeric	Antifungal Agent
4	Tulsi	Antifungal Agent

5	Coconut oil	Soap Base
6	Glycerine	Soap Base
7	Perfume (Lavender oil)	Flavoring Agent
8	Almond oil	Moisturizer
9	Preservative	Preservative

3. Method for Herbal Soap:

3.1 Extraction:

The *Azadiracta indica*, *Aloe barbendesis*, *Curcuma longa* and *Ocimum sanctum* powder was extracted. The samples are then homogenized and combined in a 1:10 ratio with the solvents (water, ethanol, and chloroform). The combination was added to a 250 mL conical flask with a cotton plug or aluminum foil covering. The jar was subjected to a 24-hour shaker in a rotator. Following incubation, the combination was put through a filter made of Whatmann No. 1 paper. The unrefined filtrates, until further examination, the results were kept in the refrigerator. The active ingredients of these three extracts were determined.

3.2 Formulation of antifungal soap:

The soap base contains glycerine and coconut oil which are used for the preparation of soap. The soap base is weighed and taken, then cut into small pieces and melt at the low heat in the heating mantle. Then, specific amount of all these herbs oil and perfume (lavender oil) are added little by little. Stir the mixture slowly, add preservative and continuously for 30–40 min. This mixture is poured into a rectangle or any shape mold, and then, it is allowed to solidify at room temperature until set and cooled down and kept under physical observation for any characteristic changes [32]

4. Evaluation parameters:

- **Determination of clarity, color, and odor of soap:** Clearness, color, and odor were examined with unaided eyes on a white background.
- **Determination of pH:** The digital pH meter is used to determine the soap's pH.
- **Foam test:** The 5 ml of soap solution is taken in the test tube and shaken well. Then, the result is observed with naked eyes.
- **Foam height:** In the measuring cylinder, 1 g of soap is added and diluted with purified water. A scale is used to measure the foam height after the cylinder has been tightly close by hand and shaken 10 times.
- **Foam retention:** A measuring cylinder is filled with 5 mL of soap solution, which is measured and it is shaken briskly. Foam started to show up. Throughout a 10-minute period, the volume of foam was measured at 1-min intervals.
- **Viscosity:** The herbal soap viscosity is determined by determined using Brookfield Viscometer.
- **Weight Variation:** Collected 10 soap's and calculate the individual weight then finally calculated the average weight of herbal soap's.
- **Emolliency Test:** Emolliency test evaluates to check soap formulations. A 2 g portion of each soap formulation was smeared onto the surface of white sheets of paper over approximately 5 cm² surface area and left to stand on the laboratory shelf for 24 h after which the degree of translucency was graded into a three-level ranking: mild, moderate, or strong translucency.
- **Determination of Percentage Free Alkali:** About 5 gm of sample was taken in a conical flask and added to it into 50 ml of neutralised alcohol. It was boiled under reflux on a water bath for 30 minutes, cooled and add 1 ml of phenolphthalein solution. Then it immediately titrated with 0.1 N hydrochloric acid.
- **Percentage Yield:** The empty container was Weighed in which the herbal soap's formulation was stored then again the container was weighed with herbal soap's formulation. Then subtracted the empty container weighed and the container with herbal soap's formulation then it gives the practical yield. Then the percentage yield was calculated by the formula. Percentage Yield = Practical Yield / Theoretical Yield × 10
- **Solubility:** 2gm of soap added 10ml of solvents and shake it 2 min view the solubility result.
- **Skin Irritancy Test:** Mark an area (1sq.cm) on the left hand back surface. The herbal soap was applied to the specified area and time was noted. Irritancy, erythema, edema, was checked if any regular intervals up to 24 hrs and reported.

5. Marketed Formulation Of Herbal Antifungal Soap:

Sr.no	Brand name	Manufacturer
1	Aactaril	Himalaya
2	Coal-Sense soap	The Aesthetic Sense (TAS)
3	Shine N Beauty soap	Swisschem Dermacare
4	Ultrashine soap	Swisschem Dermacare
5.	Medimex	Medimex ayurvedic
6.	Aloglow soap	Swisschem Dermacare

6. Conclusion:

In this review we concluded that antifungal soaps form herbal origin are prepared and hence we can conclude that the neem, aloe vera, turmeric and tulsi can be combined to make soap that has antifungal properties that can be used on a variety of skin conditions as well as in daily life for healthy skin. Herbal antifungal soaps shows better activity and less side effects as compare to the synthetic soaps. Extensive use of synthetic antifungal soaps may show resistant or side effects to the body but in the case of herbal soaps there is no resistant nor the side effect. They are safe to use, Herbal soaps have a strong impact on the skin, in terms of making it soft, smooth and supple. On the contrary, chemical soaps are full of damaging substances that can harm the skin as well as health. The multiple benefits of herbal soaps make them the right choice for better skin care and optimal health outcomes Natural soaps have less side effects such as rashes, irritancy, etc as compared to the synthetic soaps. Herbal soaps prepared by all these herbs satisfied the evaluation parameters for soap.

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